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IMPORTANCE OF TIMBER-BASED EMPLOYMENT TO THE DOUGLAS-FIR REGION, 1959 TO 1971

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ABSTRACT

Contrary to substantial increases in total employment in the Douglas-fir region from 1959 to 1971, employment in timber-dependent industries declined slightly. Only three of the 14 economic areas in the region matched national employment gains in these industries. Although economies that were highly dependent upon timber in 1959 still were in 1971, in nearly every instance a smaller proportion of economic base employment was concentrated in the timber-dependent industries.

Keywords: Employment, economic conditions, timber, forest products, Oregon, Washington.

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In 1968 the Pacific Northwest Forest and Range Experiment Station evaluated the importance of timber-based industries to the economy of the Douglas-fir region.[2/] This report expands that work to include trends in timber-based employment for a 12-year period for each of 14 economic areas of western Oregon and western Washington. We also trace the role over time of the timber-based industries as producers of goods and services for markets beyond those local areas.

REGIONAL EMPLOYMENT INCREASED BY 25 PERCENT IN THE 1960'S

The 1960's saw total employment in the Douglas-fir region rise by more than 25 percent--from 1,267,000 to 1,621,000 in 1970. The rate of increase in employment in the service or noncommodity-producing industries was about twice the rate of increase in the commodity-producing sectors. Employment in the latter, which includes timber-dependent industries, fluctuated more often than the noncommodity-producing sectors in response to changes in general economic conditions.

These trends in total employment during the 1960's are revealed in year-to-year changes in the numbers of "covered" employees, that is, those employees who are covered by unemployment insurance in Oregon and Washington (fig. 1). These figures, which are the most complete up-to-date annual series on employment available, include about two-thirds of the total employment reported for the region in the 1970 U.S. Census of Population. A smaller proportion of total service industry workers than total commodity-producing workers is included, however, in the covered employment series.[3/] While the numbers of total employees for individual years can only be approximated, trends in total employment changes are accurately indicated.

[2/] Wilbur R. Maki, Con H. Schallau, and John H. Beuter. Importance of timber-based employment to the economic base of the Douglas-fir region of Oregon, Washington, and northern California. USDA For. Serv. Res. Note PNW-76, 6 p., illus., 1968. Pac. Northwest For. & Range Exp. Stn., Portland, Oreg.

[3/] Throughout this paper we rely on covered employment estimates because total employment estimates are available only for census years. Any adjustments to covered employment data for intervening years would be arbitrary.

Ratios of covered to total employment	*1960*	*1970*
Commodity	0.70	0.80
Service	.53	.58
All	.60	.65

Among commodity employees, agricultural-related forestry workers are notably underrepresented in covered employment figures.

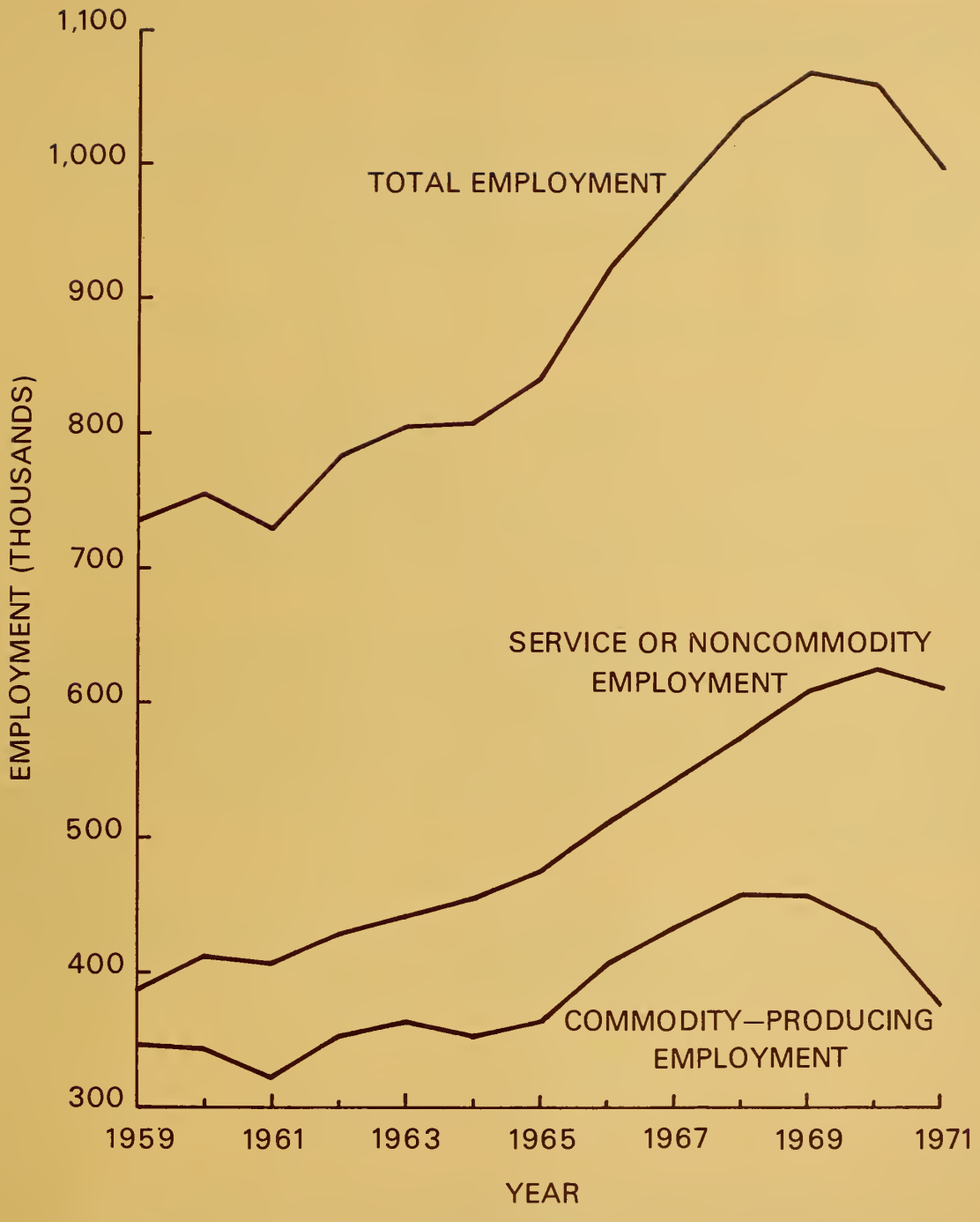

Figure 1.--*Covered employment in the Douglas-fir region of Oregon and Washington, 1959-71.*

EMPLOYMENT IN TIMBER-DEPENDENT INDUSTRIES DECREASED SLIGHTLY

The timber-dependent industries[4/] in the region did not share in the substantial growth in employment. In 1971 there were slightly fewer employees in these industries than there had been 12 years earlier. Although Oregon held its own, timber-industry employment decreased 8 percent in Washington, causing a 3-percent drop in the combined areas.

CHANGES IN EMPLOYMENT TRACED FOR 14 ECONOMIC AREAS

To explore employment changes in relatively small areas, we divided the 38-county region into 14 economic areas, based essentially on commuting distances and shopping patterns (fig. 2). The largest and most rapidly growing city in each economic area is identified as the growth center. The growth center and other communities in each economic area are linked together by a variety of economic ties.

In Oregon, employment trends from 1959 to 1971 were mixed. To illustrate, we selected covered employment in the lumber and wood products industries (including furniture and fixtures).[5/] Astoria and Corvallis suffered decreases of 26 and 18 percent, respectively, and Portland and Eugene showed increases of 9 and 12 percent in this industry group (table 1). In Washington, the trend was nearly all downwards: only Port Angeles showed a substantial gain.

To permit measuring the performance of these local industries against the performance of the national lumber and wood products industries, we broke down the employment figures further. We reasoned that some causes of employment changes were local, and others were the result of

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[4/] Here we define the timber-dependent industries in terms of the Standard Industrial Classification (SIC) categories, including "forestry" (SIC 08), "lumber and wood products" (SIC 24), "furniture and fixtures" (SIC 25), and "paper and allied products" (SIC 26).

[5/] We selected the two-SIC industry group (SIC 24 and SIC 25) because of its comparability with the industry grouping in the U.S. Census of Population reports for 1960 and 1970.

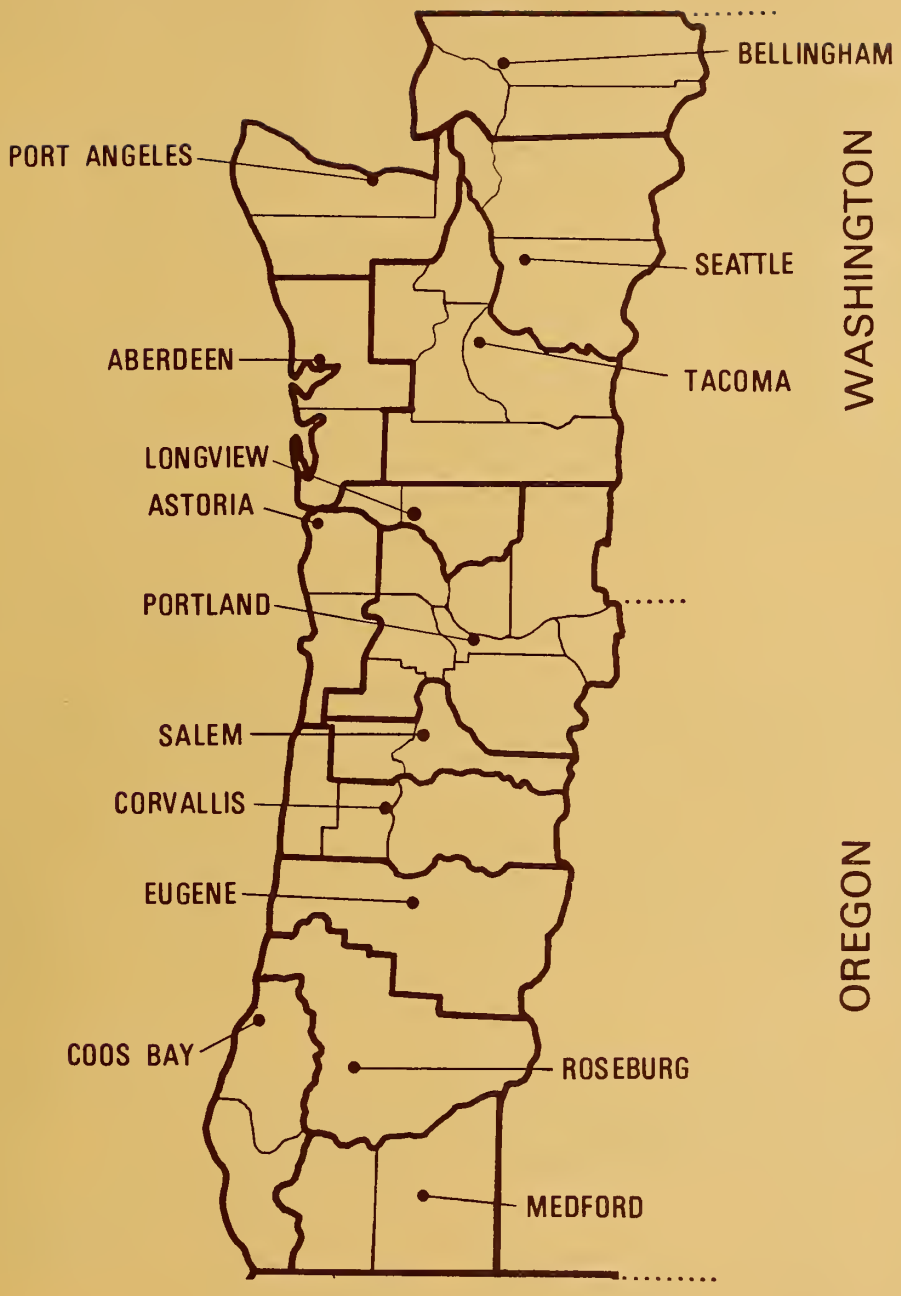

Figure 2.--*Economic areas and growth centers in Douglas-fir region of Oregon and Washington.*

TABLE 1.--*Estimated total changes and those due to local conditions in covered employment in the lumber and wood products industries in western Oregon and Washington, 1959-71*

Economic area	Total covered employment		Percent actual change in employment					Percent change in employment due to local conditions 1/				
	1959	1971	1959-62	1962-65	1965-68	1968-71	12-year period	1959-62	1962-65	1965-68	1968-71	12-year period
Oregon areas:												
Astoria	2,997	2,233	2	-15	0	-14	-26	5	-22	-4	-12	-32
Coos Bay	7,441	6,560	-4	3	-4	-8	-12	-1	-4	-8	-6	-19
Corvallis	8,101	6,657	-4	4	-7	-11	-18	-1	-3	-11	-9	-25
Eugene	11,859	13,318	13	10	-5	-4	12	16	3	-10	-2	6
Medford	5,968	6,068	-11	10	12	-7	2	-8	2	7	-5	-5
Portland	12,125	13,253	1	11	12	-13	9	4	4	8	-11	3
Roseburg	7,315	7,709	-9	15	-7	8	5	-6	8	-12	10	-1
Salem	2,490	2,284	7	10	-8	-15	-8	10	2	-13	-13	-15
Oregon total	58,296	58,082	-2	8	0	-7	0	1	1	-5	-6	-7
Washington areas:												
Aberdeen	6,548	4,862	-8	15	-1	-30	-26	-5	7	-5	-28	-32
Bellingham	1,963	1,646	-3	3	4	-19	-16	0	-5	-1	-17	-23
Longview	5,160	5,338	-10	17	-4	2	3	-7	10	-8	4	-3
Port Angeles	1,802	2,034	0	2	23	-11	13	3	-5	19	-9	6
Seattle	9,571	8,905	-5	-2	6	-6	-7	-2	-10	1	-4	-14
Tacoma	11,035	10,570	-7	7	3	-7	-4	-4	0	-1	-5	-11
Washington total	36,079	33,355	-6	7	3	-10	-8	-3	0	-1	-9	-14
Douglas-fir region	94,375	91,437	-3	8	1	-9	-3	0	0	-3	-7	-10

1/ Calculated as the difference between actual change and change that would have just matched national employment changes in the lumber and wood products industries of:

Period	Percent change
1959-62	-3.0
1962-65	7.3
1965-68	4.5
1968-71	-1.9
12-year	6.7

national industry trends.[6] This led to a series of calculations such as the following:

1. Between 1959 and 1962, nationwide covered employment in the lumber and wood products industries declined by about 3 percent.
2. Employment in the lumber and wood products industries in the Astoria area in 1959 was 2,997. If the area had exactly mirrored national trends, 91 jobs would have been lost.
3. In fact, 50 jobs were gained in the lumber and wood products industries in the Astoria area between 1959 and 1962. This was about 2-percent gain in employment.
4. The difference between the projected loss of 91 jobs and the actual gain of 50 jobs must have been due to local conditions. This difference of 141 jobs, expressed as a percentage [5 percent = 2 percent - (-3 percent)] in table 1, is defined as the change in employment due to local conditions.

DECREASES IN LOCAL EMPLOYMENT NOT EXPLAINED BY NATIONAL TRENDS

National employment in the lumber and wood products industries went down from 1959 to 1962, up from 1962 through 1968, and down again from 1968 to 1971. For the 12-year period there was a 7-percent net increase.

Local influences on employment for the most part were negative. Only in the Portland, Eugene, and Port Angeles areas did local conditions lead to exceptional increases in employment. None of the other areas increased to the extent that would be expected on the basis of national trends; half the areas suffered substantial losses.

For the most part, area employment factors are closely associated with the local conditions of sustained timber utilization and employment in each of the 14 areas. Included in these local considerations is the relative competitive position of the particular area for the lumber and wood products industries group.

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[6] This kind of bookkeeping breakdown is known as a shift-share analysis. The reader is referred to L. D. Ashby, The geographical redistribution of employment: an examination of the elements of change, Surv. Curr. Bus. 44: 13-20, 1964. An application to the southern forest industry is given by George F. Dutrow, Shift-share analysis of southern forest industry, 1958-1967, Forest Prod. J. 22:10-14, 1972.

RELATIVE IMPORTANCE OF WOOD PRODUCTS INDUSTRIES TO LOCAL ECONOMIES DECLINING

We know that total employment in the Douglas-fir region increased substantially from 1959 to 1971. And we know that during the same period there was a slight decrease in employment in the timber-dependent industries. This suggests that these industries have become less important, at least with reference to total covered employment.

Further analysis shows that the timber-dependent industries are less important, also, in terms of the region's economic base. In 1959, these industries accounted for 46 percent of the economic base; by 1971, the percentage had declined to 40. Thus, the timber dependency of the regional economy had declined measurably during the 1959-71 period.

IMPORTANCE OF INDUSTRIES MEASURED BY CONTRIBUTION TO ECONOMIC BASE

Our measurement of the importance of timber-based employment starts with an identification of those industries which produce goods and services for markets outside their local areas. Most commodity-producing employment, such as in the lumber and wood products industries, is classified as part of this economic base. In contrast, most service employment, such as in barber shops, schools, and local governments, is geared to local needs. Dollar inflows from nonlocal sales of the products of economic base industries are used in buying locally-produced goods and services. Generally, the economic vitality of a community depends on the success of its economic base.7/

To evaluate the contribution of a particular industry to the economic vitality of an area, we estimate its relative importance in the area's economic base. We accept the national percentage distribution of employment among industries as a norm. For any sector of an area's economy, an industry with employment in excess of this norm is considered to be producing for export markets and, therefore, is part of the area's economic base.

Consider the Roseburg economic area. In 1970, 26.2 percent of all employees, including those not under unemployment insurance, worked for

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7/ Charles M. Tiebout. The community economic base study. Suppl. Pap. No. 16. New York, Comm. Econ. Dev., 1962. See also, Edward L. Ullman, Michael F. Dacey, and Harold Brodsky. The economic base of American cities. Monogr. No. 1. Seattle, Cent. Urban & Reg. Res., Univ. Wash., 1969.

the timber-dependent industries. In the United States as a whole, 1.5 percent of all workers were in this group. Therefore, based on just these industries, 24.7 percent of all the Roseburg area employees were in excess employment. Those 5,967 employees were producing for sales outside the economic area; they were part of the area's economic base. All other industries together contributed another 975 workers in excess employment. Thus, about 86 percent of the Roseburg area excess base of 6,942 workers were in the wood products industries. We label this percentage the timber-dependency ratio. We use the corresponding ratio based only on covered employment data, which is available on an annual basis, as the timber-dependency indicator.[8/]

TWELVE-YEAR TREND SHOWS DECREASING TIMBER DEPENDENCY

Figure 3 shows that most of the economies that were highly dependent upon timber in 1959 were still highly dependent 12 years later. But in nearly every instance, the timber-dependent industries made up a declining share of the economic bases.

The relative importance of timber-based employment decreased substantially in a number of economic areas (table 2). However, if we define as highly timber-dependent those areas with a timber-dependency indicator of 70 percent or greater, half the economic areas were still highly timber-dependent in 1971. The region as a whole still relies heavily on timber-based employment to bring in money from outside the individual economic areas. Thus, the economies of at least half of the economic areas in the Douglas-fir region are extremely vulnerable to the ups and downs of the timber-dependent industries.

[8/] Our analysis overestimates the degree of timber dependency of those areas with significant excess employment in industries not included in the covered employment series. However, the timber-dependency indicators are useful as measures of the direction of changes in timber dependency for given economic areas.

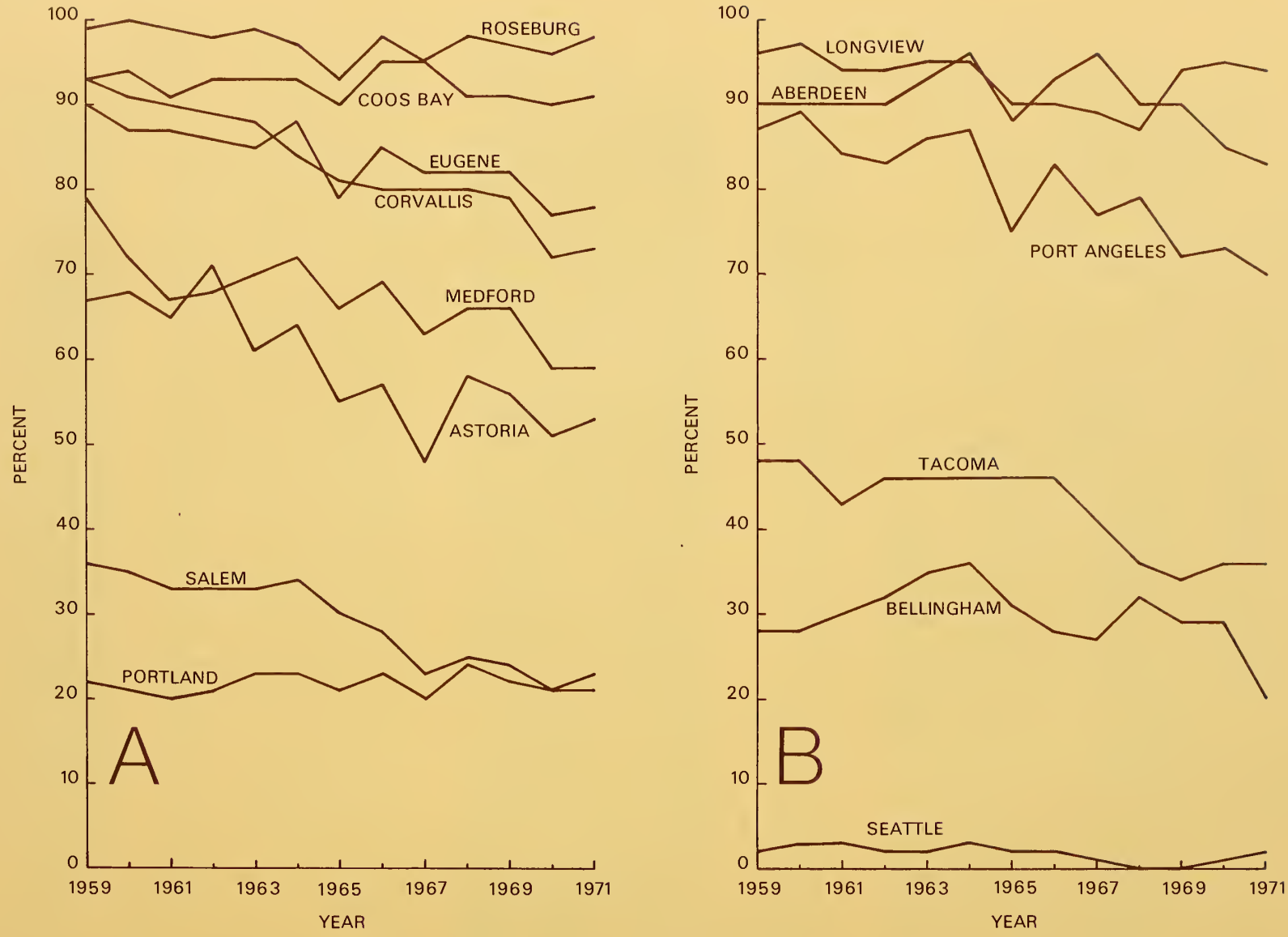

Figure 3.--*Excess employment indicators of timber dependency of economic areas from 1959 to 1971: A, Western Oregon; B, western Washington.*

TABLE 2.--*Classification of economic areas by degrees of dependency upon timber-based employment, 1959 and 1971*

Degree of dependency	Economic area	Percentage of excess employment in wood products industries	
		1959	1971
Slight	Seattle	2	2
	Portland	22	21
	Salem	36	23
	Bellingham	28	20
Moderate	Tacoma	48	36
	Astoria	67	53
	Medford	79	59
High	Port Angeles	87	70
	Corvallis	93	73
	Eugene	90	78
	Aberdeen	90	83
	Coos Bay	93	91
	Longview	93	94
	Roseburg	99	98
	Douglas-fir region	46	40

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